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Pneumatic mixer

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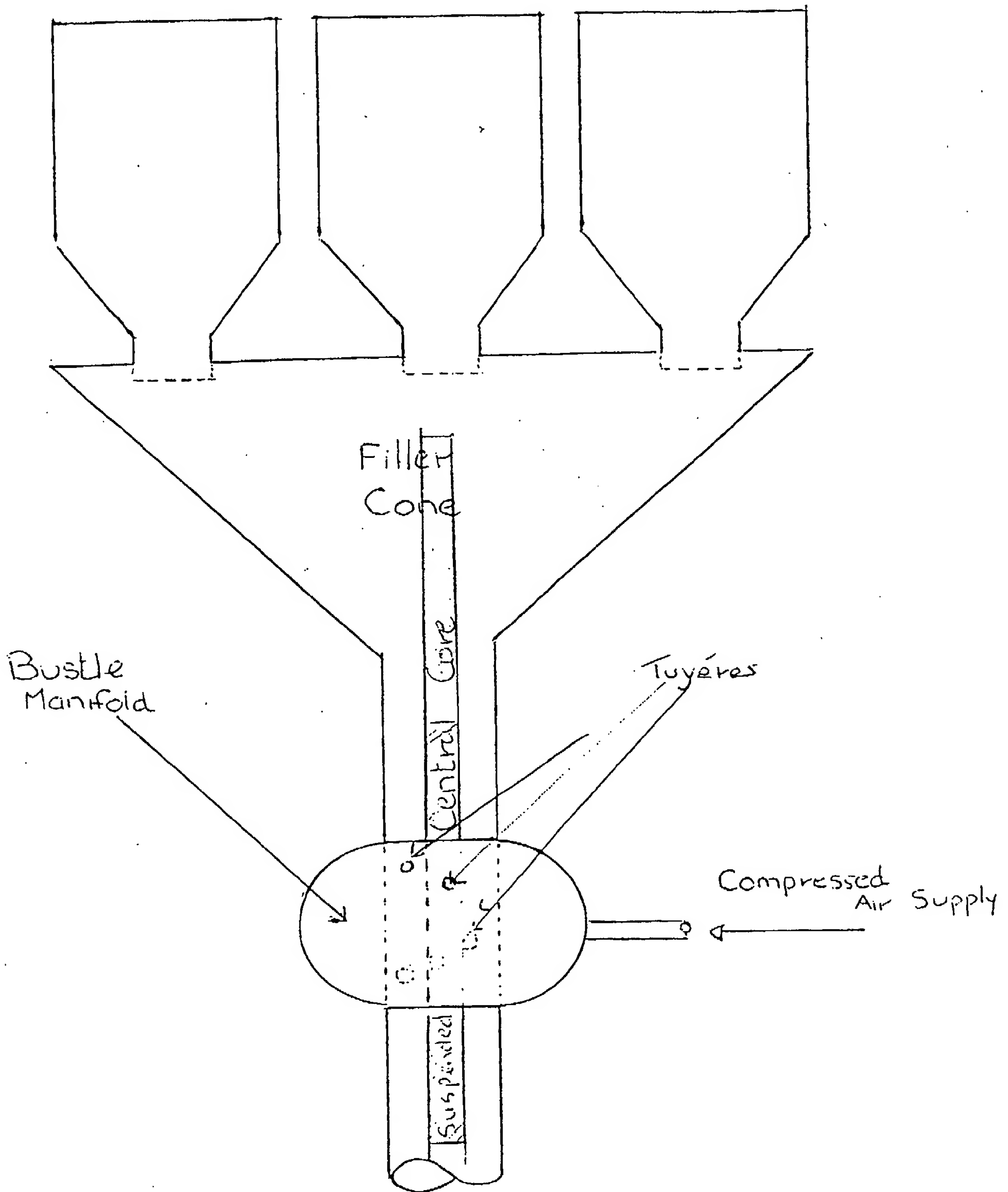
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GB2196546 A
GB2141942 A
GB2082931 A
GB1462667 A
GB0808293 A

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Any Number of Material Containers
giving Controlled Supply to Mixer.



Gravity Feed, Compressed Air mixing System.

PNEUMATIC MIXER

This invention relates to a pneumatic mixer. Presently, industrial mixers consist of revolving containers with internal ridges to create a gravity tumbling action with the resulting mixture being impelled to a delivery by mechanical pumps or impellers. These machines are liable to excessive wear and breakdown depending on the abrasive nature of the materials being mixed.

According to the present invention there is provided a pneumatic mixer comprising at least one material container having a conduit extending downwardly therefrom, the conduit having apertures in a wall for the purpose of supplying pressurised air into the conduit to define a mixing zone, and having a central core passing completely through the mixing zone, whereby a material to be mixed falls from the at least one container under gravity and the pressurised air fed through the apertures imparts a mixing action to the material.

Preferably, the apertures in the wall of the conduit extend tangentially into the mixing zone, and are preferably arranged to provide a spiral mixing action to the material. The compressed air is preferably supplied to the apertures by a manifold around the apertures. Preferably the material container is a hopper funnel.

A gravity fed hopper system of a conventional design may be used to supply a variety of materials of suitable size to a funnelled smooth pipe. At a calculated distance a series of tangential holes (tuyeres) supplying compressed air in the side of the pipe, together with a static central core (to prevent a neutral mixing position), will impart a spiral mixing action to the materials. The pressure of the continuous flow of the compressed air assists in the gravity flow of the mixture to the delivery point. The air then dissipates in the normal way.

This system operated by gravity and compressed air will mix any type of materials and deliver them to a site at some distance from the mixing point thus obviating expensive equipment with capital and maintenance costs. The mixing pipe can be of any suitable material to allow for the abrasive actions of materials but can be easily replaced. Cleaning after use will give no problem as there are no moving parts nor corners in which the mixture can remain.

The complete installation can be of any suitable size from trailer portable to fixed site industrial use.

Figure 1 shows an upright front elevation of an installation with feed hoppers at the top leading to a funnelled pipe with a static core located in the centre. The position of the tuyeres will be such as to prevent an unwanted upward pressure of compressed air. These tuyeres can be supplied by a 'Bustle' which distributes compressed air from a conventional supply. The static core shown extends past the tuyeres to enable thorough mixing of the materials. The distance from the mixing point to the delivery point can be calculated according to the type of materials to be mixed, the gravity effect and the pressure of the compressed air.

The pneumatic mixer can be dismounted to blow materials along the delivery pipe.

CLAIMS

1. A pneumatic mixer comprising at least one material container having a conduit extending downwardly therefrom, the conduit having apertures in a wall for the purpose of supplying pressurised air into the conduit to define a mixing zone, and having a central core passing completely through the mixing zone, whereby a material to be mixed falls from the at least one container under gravity and the pressurised air fed through the apertures imparts a mixing action to the material.
 2. A mixer as claimed in claim 1, wherein the apertures in the wall of the conduit extend tangentially into the mixing zone.
 3. A mixer as claimed in claim 2, wherein the apertures are arranged to provide a spiral mixing action to the material.
 4. A mixer as claimed in any preceding claim, wherein the compressed air is supplied to the apertures by a manifold around the apertures.
 5. A mixer as claimed in any preceding claim wherein the material container is a hopper funnel.
 6. A pneumatic mixer substantially as hereinbefore described with reference to the accompanying drawing.
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